NPIC/TSSG/DED-1201-68
9 May 1968

MEMORANDUM FOR: Chief, Projects and Programs Staff, TSSG

25X1A ATTENTION : [redacted]

SUBJECT : Response to Your Request for More Information Relative to Modification of the [redacted] Trichromatic Microdensitometer 25X1A

(Paragraphs Refer to Your Four Questions)

1. "Could any of the work be done in-house?" The Electronic Modifications could possibly be done in-house, but the time required for our electronic technicians to familiarize themselves with the circuits and to design the necessary changes would probably be more than they could afford to spend away from their every day maintenance tasks. We do not have the capability to make the optical changes.

2. "What is the estimated cost and alternatives?" The cost for the electronics is about [redacted] The cost for the optics is really unknown but could run anywhere from [redacted] depending on our requirements. The alternatives to the increased sampling rate are:

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a. To install an oscillator and to gate the digitizer off the oscillator as proposed.

b. To install a master clock and run both the drive motor and the digitizer off this clock (a more expensive proposition which might result in a slight increase in accuracy).

c. To do nothing (this would prevent our analyses from being accurate beyond about 50 1/mm).

The alternatives to the shortened scan length are:

a. To install thumbwheel switches decade counters, a comparison circuit and other interface circuits so as to change scan directions when the sign changes and when the distance traveled matches the preset number (as proposed).

b. To change the configuration and the sensitivity of the microswitches (point of scan direction change would not be very repeatable).

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c. To install a complete programming system with electronic switching elements to allow programming both X and Y axis of the scan with data cutoff at the end of each scan and reactivate at the beginning of each successive scan (rather expensive).

d. To do nothing and learn to live with the longer scans--this wastes a lot of time on the machine.

The alternatives to the optics problem are:

a. To use the existing lens system (after it has been properly aligned) with the high power objective for black and white photography and a lower powered objective for color photography; this would limit the capability to resolve high frequency color material.

b. To use an objective lens system similar to the present high power objective, but with a variable iris in the lens; this would allow the tradeoff between resolution and depth of field to be varied according to the situation.

c. To design a new lens system which would have points of focus for different wavelengths at different depths corresponding to the depths of the various color layers in the color film. This method would require that all color film analyzed would have to have a similar arrangement of layers or alternate lenses provided; however, the resolving power of such a system would be very high.

3. "What technical approach would you take in each of the problem areas?" I would take alternative 1 in both of the electro/mechanical problems. In the optics problem it is dependent upon the requirement for high resolution in color film analysis. If we begin getting this new 150 l/mm color film in quantity, we will need alternative 3.

4. "What is the probability of success for the focussing problem?" The probability of success is good if we can afford the optics that would give us the needed results.

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Orig - Addressee
25X1A 1 - [redacted]
1 - TSSG/DED
1/2 - TSSG/DED/R&DBI

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